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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,372	02/27/2002	Tatsuoki Kohno	219995US0TTCD	4786

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EXAMINER

WEINER, LAURA S

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/083,372

Applicant(s)

KOHNO ET AL.

Examiner

Laura S. Weiner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-8,10 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8,10 and 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4-28-05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Response to Arguments***

1. Applicant's arguments filed 3-10-05 have been fully considered but they are not persuasive. Kolb et al. teaches an electrolyte comprising a nonaqueous solvent, propylene carbonate; an electrolyte salt and a macromolecular material added such as PMMA or polyethylene oxide. Kolb et al. goes on to teach that two electrolytic solutions were prepared with PMMA comprising 5wt% of the electrolytic solution in which the first solution had a viscosity of 2733 cps while the second solution had a viscosity of 1742 cps. Each of these electrolytes contain a viscosity which is well within the claimed viscosity range of 7 cP to 30,000 cP. Kolb et al. teaches in column 7, lines 50-55, that the polyethylene oxide has a molecular weight of at least 300,000 and in column 7, lines 16-29, that the molecular weight of PMMA used was 996,000 and 350,000. Claim 8 claims that the average molecular weight of the macromolecular material is in the range of 1×10^3 to 1×10^8 in which polyethylene oxide and PMMA taught by Kolb et al. is within. Applicant argues that Kolb et al. teaches a gel electrolyte and the claimed invention is a liquid electrolyte which is a fluid but as explained above it doesn't matter what one calls the solution but what is key is that Kolb teaches an electrolyte which has the claimed viscosity so the teaching reads on the claims.

Claim Rejections - 35 USC § 102

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kolb et al. (6,080,282).

Kolb et al. teaches in column 3, lines 20-40, an electrolytic solution comprising a polymerizable electrolyte material and a reinforcement polymer, poly(methyl methacrylate) (PMMA). Kolb et al. teaches that PMMA is used to vary the viscosity of the solution or mechanical properties. Kolb et al. teaches in column 7, line 36 to column 8, line 6, an electrolytic solution for use as a gel electrolyte in an electrolytic cell comprising a polymerizable electrolyte material including polyethylene oxide (PEO), a reinforcement polymer including poly(methylmethacrylate), a solvent, a salt, etc. The electrolyte solution has a viscosity in which the electrolytic solution further includes a means for controlling the viscosity. Kolb et al. teaches in column 4, lines 1-11, that the addition of PEO to the polymerizable electrolyte material may further increase the viscosity of the electrolytic solution. Kolb et al. teaches in column 3, lines 46-48, that the solvent may comprise any conventional solvent such as be propylene carbonate. Kolb et al. teaches in column 7, lines 16-28, a further test was performed wherein the molecular weight of PMMA was varied to illustrate control over the viscosity of the electrolytic solution. In this test, two electrolytic solutions were prepared with PMMA comprising 5wt% of the electrolytic solution. The first solution had a viscosity of 2733 cps while the second solution had a viscosity of 1742 cps.

Claim Rejections - 35 USC § 103

3. Claims 2-4, 6 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kolb et al. (6,080,282).

Kolb et al. teaches in column 7, line 36 to column 8, line 6, an electrolytic solution for use as a gel electrolyte in an electrolytic cell comprising a polymerizable electrolyte material including polyethylene oxide (PEO), a reinforcement polymer including poly(methylmethacrylate), a solvent, a salt, etc. The electrolyte solution has a viscosity in which the electrolytic solution further includes a means for controlling the viscosity. Kolb et al. teaches in column 4, lines 1-11, that the addition of PEO to the polymerizable electrolyte material may further increase the viscosity of the electrolytic solution. Kolb et al. teaches in column 3, lines 46-48, that the solvent may comprise any conventional solvent such as be propylene carbonate. Kolb et al. teaches in column 7, lines 16-28, that PMMA was varied to illustrate control over the viscosity of the electrolytic solution. A first solution had a viscosity of 2733 cps and a second solution had a viscosity of 1742 cps.

Since Kolb et al. teaches the same nonaqueous liquid electrolyte comprising the same macromolecular material, the same nonaqueous solvent and an electrolyte, then inherently the same electrolyte having a viscosity at 20 degrees C of 7 cP to 30,000 cP or 50 cP to 10, 000 cP at a shear rate of 20 s⁻¹ or 7 cP to 10, 000 cP at a shear rate of 20 s⁻¹ or a fluid which exhibits non-Newtonian properties or a fluid whose apparent viscosity at 20 degrees C decreases with the increase of the shear rate or the

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macromolecular material has a ratio of ion conductivity to viscosity at 20 degrees C is < 0.1 must also be obtained.

In addition, the presently claimed property of electrolyte having a viscosity at 20 degrees C of 7 cP to 30,000 cP or 50 cP to 10,000 cP at a shear rate of 20 s⁻¹ or 7 cP to 10,000 cP at a shear rate of 20 s⁻¹ or a fluid which exhibits non-Newtonian properties or a fluid whose apparent viscosity at 20 degrees C decreases with the increase of the shear rate or the macromolecular material has a ratio of ion conductivity to viscosity at 20 degrees C is < 0.1 would have obviously have been present once the Kolb et al. product is provided. *In re Best*, 195 USPQ 433 (CCPA 1977).

4. Claims 7-8, 10, 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolb et al. (6,080,282) in view of Sasaki et al. (5,556,721).

Kolb et al. teaches the claimed invention as explained above. Kolb et al. teaches in column 7, line 36 to column 8, line 6, an electrolytic solution for use as a gel electrolyte in an electrolytic cell comprising a polymerizable electrolyte material including polyethylene oxide (PEO), a reinforcement polymer including poly(methylmethacrylate), a solvent, a salt, etc. Kolb et al. teaches in column 7, lines 50-55, that the polyethylene oxide has a molecular weight of at least 300,000 and in column 7, lines 16-29, that the molecular weight of PMMA used was 996,000 and 350,000.

Kolb et al. discloses the claimed invention except for specifically teaching that the solvent contains gamma-butyrolactone.

Sasaki et al. teaches a nonaqueous electrolyte battery comprising a negative electrode, a positive electrode and a nonaqueous electrolyte. Sasaki et al. teaches in column 7, lines 47-60, that the electrolyte solution comprises an organic solvent such as gamma-butyrolactone, propylene carbonate, ethylene carbonate, etc. and a lithium ion-conductive nonaqueous electrolyte such as a solid polymer electrolyte comprising polyethylene oxide, etc.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use gamma-butyrolactone instead of propylene carbonate in a electrolyte solution comprising polyethylene oxide because Sasaki et al. teaches that this is known in the art.

Conclusion

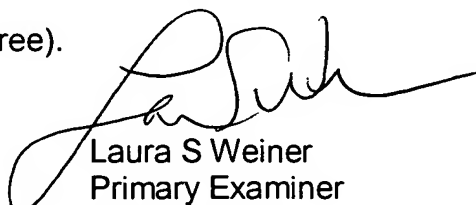
5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within ~~TWO MONTHS~~ of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Laura S Weiner
Primary Examiner
Art Unit 1745

May 10, 2005